

CLAIMS

What is claimed is:

1. A method for treating a lignocellulosic substrate, the method comprising:
implanting a conductive material into the lignocellulosic substrate;
pre-heating the implanted lignocellulosic substrate;
coating the pre-heated implanted lignocellulosic substrate with a powder coating; and
curing the powder coated substrate.
2. The method of claim 1 wherein the lignocellulosic substrate comprises a wood or wood composite.
3. The method of claim 1 wherein the conductive material is in a liquid form.
4. The method of claim 3 wherein the liquid conductive material is implanted into the substrate by spraying, dipping, brushing, or chemical vapor deposition.
5. The method of claim 1 wherein the conductive material is in a gas form.
6. The method of claim 5 wherein the gas conductive material is implanted into the substrate by chemical vapor deposition, plasma source ion implantation, or diffusion.
7. The method of claim 1 wherein the conductive material is in a solid form.
8. The method of claim 7 wherein the solid conductive material is implanted into the substrate by mechanical force and diffusion.
9. The method of claim 1 wherein the substrate is heated by a furnace, or infra-red heat source.

10. The method of claim 1 wherein the powder is selected from a group consisting of epoxy, acrylic, and polyester.
11. The method of claim 1 wherein the powder is cured thermally, via ultraviolet light radiation, or via electron-beam radiation.
12. A method for implanting a lignocellulosic substrate, the method comprising:
 - applying a solution comprising a liquid component and an anti-static component to the lignocellulosic substrate;
 - allowing the anti-static component to implant into the surface of the lignocellulosic substrate without chemically bonding or reacting with the lignocellulosic substrate; and
 - removing at least some of the liquid component from the lignocellulosic substrate whereby the lignocellulosic substrate is enabled to provide an electrically conductive substrate for a subsequent electrostatic coating process.
13. The method of claim 12 wherein removing at least some of the liquid component includes heating the lignocellulosic substrate.
14. The method of claim 13 wherein the application of solution to the lignocellulosic substrate is repeated after the heating.
15. The method of claim 13 wherein the application of solution to the lignocellulosic substrate is repeated prior to the heating.
16. The method of claim 12 wherein the antistatic component comprises an organic amine salt.
17. The method of claim 16 wherein the organic amine salt is Cocoalkylmethylbis(2-hydroxyethyl) ammonium chloride.

18. The method of claim 12 wherein the antistatic component comprises an organic amine.
19. The method of claim 18 wherein the organic amine is polyoxyethylene (15) cocoalkylamines.
19. A product formed by the method of claim 12.
20. A method for powder coating a medium density fiberboard (MDF) substrate, the method comprising:
 - treating the MDF substrate with a solution including an amine salt and a solvent;
 - allowing the amine salt to implant into the MDF substrate in a non-chemically bonded mechanism;
 - heating the implanted MDF substrate to remove a majority of the solvent;
 - applying an electrical voltage to the heated MDF substrate; and
 - applying a charged coating substance to the voltage applied MDF substrate.
21. The method of claim 20 wherein the applied voltage is electrical ground.
22. The method of claim 20 wherein the heating is performed at a temperature from about 100° to 400° F.